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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,029	09/03/2003	Hsieh-Sheng Liao	ACMP0031USA	2028
27765	7590	12/01/2004	EXAMINER	
NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)			MOUTTET, BLAISE L	
P.O. BOX 506			ART UNIT	PAPER NUMBER
MERRIFIELD, VA 22116			2853	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,029

Applicant(s)

LIAO ET AL.

Examiner

Blaise L Mouttet

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 2, 4, 5, 7, 10-12, 14, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagoshi et al. US 6,224,182 in view of Rasmussen et al. US 4,872,026.

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Nagoshi et al. discloses, regarding claim 1, an inkjet printer (figure 8) comprising: at least one cartridge comprising an ink reservoir, a printhead (column 39, lines 40-41), and a thermal sensing element (20C, figure 10, column 8, lines 25-35), the ink reservoir being used for storing ink and the printhead comprising a plurality of nozzles and a plurality of heating elements corresponding to the nozzles (column 7, lines 57-67, column 8, lines 53-61), the thermal sensing element (20C) being used for sensing a temperature of the printhead (column 8, lines 25-35);

a detecting circuit (circuit that senses electrical signal b in figure 14 from the sensed temperature) being electrically connected to the thermal sensing element (20C) and generating a sensing signal according to the temperature of the printhead sensed by the thermal sensing element (column 17, lines 46-61); and

a controller (the main unit controller) being electrically connected to the detecting circuit and identifying a type (i.e. head characteristic) of the cartridge according to the sensing signal (column 17, lines 14-34).

Regarding claim 2, the detecting circuit is a signal sensing circuit (since it senses electrical signal b from the thermal sensing element) and is thus necessarily electrically connected to the thermal sensing element.

Regarding claims 4 and 5, the detecting circuit for the thermal sensing element is taught to be an analog to digital converter (103g) in figure 34.

Regarding claim 7, the thermal sensing element (20C) is denoted as a thermal diode sensor (column 8, lines 25-35).

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Nagoshi et al. discloses, regarding claim 10, a method for identifying a type of cartridge (abstract), at least one cartridge being installed in an inkjet printer (figure 8) the cartridge comprising a printhead and an ink reservoir for storing ink (column 39, lines 40-41), the printhead comprising a plurality of nozzles and a plurality of heating elements corresponding to the nozzles (column 7, lines 57-67, column 8, lines 53-61), the method comprising the steps of:

disposing different thermal sensing elements (20C) on different cartridges (as explained in column 21, lines 38-54 measurement of different sensing elements produces a detection of a different printhead cartridges, to achieve this effect it is clearly necessary for sensing elements with different characteristics to be disposed on the printheads associated with the different cartridges, see also column 19, line 43-column 20, line 8 and figure 4);

sensing a temperature of the printhead on the cartridge with the thermal sensing element (20C, figure 10, column 8, lines 25-35),

generating a sensing signal according to the temperature sensed by the thermal sensing element (20C) (column 17, lines 46-61); and

identifying a type (i.e. head characteristic) of the cartridge according to the sensing signal (column 17, lines 14-34).

Regarding claims 11, 12, 14 and 15, a detecting circuit for the thermal sensing element is taught to be an analog to digital converter (103g) (i.e. a signal sensing circuit/signal converter) in figure 34.

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Regarding claim 17, the thermal sensing element (20C) is denoted as a thermal diode sensor (column 8, lines 25-35).

Nagoshi et al. fails to disclose that the printhead is disposed on a bottom side of the ink reservoir.

Rasmussen et al. discloses disposing an inkjet printhead on a bottom side of an ink reservoir (column 4, lines 5-7).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to dispose the printhead of Nagoshi et al. on a bottom side of the ink reservoir cartridge as taught by Rasmussen et al.

The motivation for doing so would have been to achieve the mechanical simplicity of printing on a horizontal plane as suggested by column 1, lines 12-26 of Rasmussen et al.

3. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagoshi et al. US 6,224,182 in view of Rasmussen et al. US 4,872,026, as applied to claims 2 and 12, and further in view of Ishinaga et al. US 5,175,565.

Nagoshi et al. in view of Rasmussen et al. render obvious the subject matter of claims 2 and 12 as explained in the 35 USC 103 rejection above.

Nagoshi et al. in view of Rasmussen et al. fails to disclose that the signal sensing circuit is a voltage divider.

Ishinaga et al. discloses thermal sensing elements (2) built into an inkjet printhead in a similar fashion to that of Nagoshi et al. and a signal sensing circuit (figure

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3) for the thermal sensing elements incorporating a voltage divider (column 7, lines 9-24).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the voltage divider circuit as taught by Ishinaga et al. as the signal sensing circuit of Nagoshi et al. in view of Rasmussen et al.

The motivation for doing so would have been to perform the temperature detection with high accuracy and good response as taught by column 2, lines 6-10 of Ishinaga et al.

4. Claims 6, 9, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagoshi et al. US 6,224,182 in view of Rasmussen et al. US 4,872,026, as applied to claims 1 and 10, and further in view of Takayanagi et al. US 5,485,182.

Nagoshi et al. in view of Rasmussen et al. render obvious the subject matter of claims 1 and 10 as explained in the 35 USC 103 rejection above.

Nagoshi et al. in view of Rasmussen et al. fails to disclose that the thermal sensing element is a thermistor or a resistance temperature detector.

Takayanagi et al. teaches the equivalence of thermal diode, thermistor and resistance based temperature detectors on inkjet printing heads (column 8, lines 47-51, column 6, line 50 – column 7, line 28).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to use any one of a thermistor, resistance based temperature detectors or

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any other temperature sensor equivalent to thermal diodes as suggested by Takayanagi et al. as the thermal sensing element of Nagoshi et al. in view of Rasmussen et al.

The motivation for doing so would have been to reduce design constraints (by expanding the range of usable thermal sensor types) and because Takayanagi et al. teaches that these sensors are equivalents in the inkjet art.

5. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagoshi et al. US 6,224,182 in view of Rasmussen et al. US 4,872,026, as applied to claims 1 and 10, and further in view of Kneezel et al. US 5,585,825.

Nagoshi et al. in view of Rasmussen et al. render obvious the subject matter of claims 1 and 10 as explained in the 35 USC 103 rejection above.

Nagoshi et al. in view of Rasmussen et al. fails to disclose that the thermal sensing element is a thermocouple.

Kneezel et al. teaches the equivalence of thermocouples with other temperature sensors for detecting temperatures of ink cartridges (column 5, lines 4-6).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to use thermocouples as suggested by Kneezel et al. as the thermal sensing element of Nagoshi et al. in view of Rasmussen et al.

The motivation for doing so would have been to reduce design constraints (by expanding the range of usable thermal sensor types) and because Kneezel et al. teaches the equivalents of thermocouples to other thermal sensors in the inkjet art.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet who may be reached at telephone number (571) 272-2150. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, Art Unit 2853, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet November 26, 2004

Blaise Mouttet 11/26/2004